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Crime and Happiness Amongst Heads of Households in Malawi

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**Department of Economics and International Development**



# **Crime and Happiness amongst Heads of Households in Malawi**

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## **Introduction**

This paper analyses the specific relationship between crime and life satisfaction in Malawi and whether this relationship is affected by gender. Initially a model is estimated to reveal what correlates with being a victim of crime in Malawi with specific reference to consumption levels, household assets and gender<sup>1</sup>. Generally, crime statistics reveal that males are more likely to be the victims and perpetrators of a crime than females (Naude, Prinsloo and Ladikos, 2006; Fisher and Wilkes 2003). Women on the other hand are more likely to be the victims of domestic violence. It is expected that there is no systematic difference between men and women with regard to the affect being a victim of crime and perceptions of crime have on wellbeing. How people feel about crime and their own safety is open to some gender difference as alluded to by van Dijk et al (2007: 132) who found that females and the elderly feel more unsafe than men. This paper is interested in three particular relationships and whether they differ across sex, (1) whether crime victimisation, after controlling for other things, negatively effects life satisfaction, (2) whether the risk of being a victim of crime has a non-linear relationship with life satisfaction and (3) whether perceptions of safety are at all significant in reported life satisfaction.

The use of subjective happiness/life satisfaction scores to measure wellbeing has emerged as a genuine alternative to standard measures of economic wellbeing. Whilst initial research focussed on developed countries there has been a steady increase in using subjective wellbeing in understanding more about how people perceive their lives in developing countries. The majority of economic studies found that life satisfaction scores increase at a decreasing rate with respect to income but that in countries with higher income levels there may be no correlation at all (Frey and Stutzer, 2002). Cross sectional studies indicate that a concave relationship does exist within high, middle and low income countries (e.g. Di Tella, MacCulloch and Oswald, 2001; Hinks and Gruen, 2006; Hinks and Davies, 2008). Other general findings include the unemployed being significantly less satisfied with life, the highly educated being more satisfied than others and age having a U-shaped relationship with life satisfaction. Subjective happiness is not only correlated with economic factors. Social, psychological and political factors can also contribute to how happy somebody is feeling. The impact of major life changing events such as winning the lottery, or the death of somebody who

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<sup>1</sup> What causes criminal activity is addressed in Becker (1968)

is close to you reveals how quickly (if at all) people's wellbeing scores react to these events over a number of years (Gardner and Oswald, 2007; Oswald and Powdthavee, 2007). Many studies find that a 'set point' underlies people's wellbeing and that this represents a kind of equilibrium to which people tend towards or return to following such shocks (e.g. Lucas et al., 2003). Importance of family, marriage and friends is apparent in many country-specific wellbeing studies. Hudson (2006) highlights the positive correlation between individual wellbeing and trust in international and national institutions such as the police force, the rule of law and government. Kingdom and Knight (2006) find that there is no significant difference in life satisfaction scores between the searching and non-searching unemployed in South Africa as well as evidence that those searching for work feel less safe in their own neighbourhood. Powdthavee (2005) analyses the specific impact crime has on wellbeing in South Africa, finding a negative correlation. Moller (2005) too finds that crime victimisation and risk of crime are negatively correlated with wellbeing but that victimisation itself seems secondary to risk of crime in terms of explaining happiness.

The following section provides some initial life satisfaction and crime statistics for Malawi using the latest cross-sectional national survey. This section also estimates a crime-victimisation model. Section 3 provides the methodology to be used to estimate the life satisfaction equations. Section 4 presents the findings with a specific focus on gender differences in crime and life satisfaction. A conclusion follows.

## **1 Data and descriptive statistics**

We use data from the 2004/05 Malawian Integrated Household Survey (IHS) which surveyed around 11,000 households. The survey elicits subjective wellbeing measures from household heads only, who were asked to rate their overall life satisfaction on a Likert scale of 1 (very dissatisfied) to 5 (very satisfied). Descriptive statistics are presented separately for male and female headed households in Appendix I. They reveal that the average subjective wellbeing levels for males is 2.465 compared with 2.287 for females. Per capita consumption is higher in male headed households than female ones (MK25,358 against MK22,523)<sup>2</sup> and around 19% of female headed households are classified by the Malawian National Statistical Office as being ultra poor compared with 16% of male headed households.

At 48 years female heads tend to be older than their male counter parts who are around 40 years on average. Over 80% of male headed households are married compared with only 5% of female headed households. The average size of female headed households is 3.8 people compared with 4.8

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<sup>2</sup> At the time of the survey, US\$1≈MK130

for male headed households. Together the age, household size and marital differences suggest that households are headed by females following the death of the husband. A small number are de facto female heads whose husband has migrated for work.

Males are more likely to have any given level of education, and own more assets. The asset index has a mean of zero for all households (by construction) but this is 0.142 for male headed households and -0.479 for female headed households. Female headed households therefore tend to be extremely asset poor. On average female headed households live in neighbourhoods with similar crime levels to male headed households.

The IHS asked all adults to report various crime indicators. Of particular interest is information on whether individuals had been attacked during the previous year and, if so, by whom. Subjective measures relating to fear of crime were also collected.

### ***1.1 Crime and gender differences***

Males and male heads of households are more likely to have been personally attacked relative to females and female heads. Table 1 finds that 2.7% of women reported having been attacked in the previous year compared with 5.3% of men. In addition, 8.25% of attacks on women are by other household members, compared with less than 1% for men. Around 4.3% of attacks on female household heads are by other household members. Thus, females are more likely to be attacked by other household members, but considerably less so when the female is the household head. This is consistent with the hypothesis that male heads and males generally are responsible for a considerable proportion of attacks against female household members.

**Table 1: Attacks on individuals**

In the past year, were you personally attacked?				
	<b>All Female Adults</b>	<b>Female Heads Only</b>	<b>All Male Adults</b>	<b>Male Heads Only</b>
Yes	2.71%	3.68%	5.34%	6.42%
No	97.29%	96.32%	94.66%	93.58%
	100.00%	100.00%	100.00%	100.00%
If attacked, by whom?				
	<b>All Female Adults</b>	<b>Female Heads Only</b>	<b>All Male Adults</b>	<b>Male Heads Only</b>
Household member	8.25%	4.26%	0.81%	0.72%
Other relative	17.53%	17.02%	11.20%	12.00%
Neighbour	28.09%	30.85%	24.02%	20.43%
Stranger	46.13%	47.87%	63.97%	66.85%
	100.00%	100.00%	100.00%	100.00%

We investigate this further by regressing whether or not the individual had been attacked during the previous 12 months onto individual and household characteristics. Probit model I in Table 2 indicates that an individual's likelihood of being attacked declines with age. As suggested by the descriptive data, females are significantly less likely to be attacked than males and household heads are more likely to be attacked than others. The coefficient on the female-head interaction term is insignificant indicating that female heads are no less likely to be attacked than their male counterparts after having controlled for other variables. Being the wife of the household head however significantly increases the likelihood of being attacked whilst *females* who migrate for the purpose of marriage are more likely to be attacked than males who migrate for the same purpose. Females who migrate for marriage lose part of the support system available to them outside of the household. In addition, other family members are unable to ensure that she is well treated by her husband. Both of these may result in being more likely to be the victim of attacks.

When household characteristics are included in model II, the migrated for marriage and females who migrated for marriage variables become insignificant. This is driven largely not by the log of per capita consumption (household income) but by average community income. Average community income is positively associated with likelihood of being attacked. It therefore appears that richer *communities* are targeted, rather than rich individuals. The ultra poor are less likely to be a victim of violent crime whereas those with greater asset wealth are less likely to be attacked indicating that households with more assets are also better able to protect themselves<sup>3</sup>.

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<sup>3</sup> Moller (2005:307) finds that in the Nelson Mandela Metropole study that 95% of white (and wealthy) householders 'had taken some sort of measure to protect their homes', with 80% having either installed security grilles or built high walls.

**Table 2: Probit Model. Dependent Variable: Have you been attacked in previous 12 months?**  
**Yes=1, No=0†**

	<b>1</b>	<b>2</b>
<b>Age</b>	-0.011*** (-9.632)	-0.010*** (-9.006)
<b>Female</b>	-0.148*** (-2.706)	-0.140** (-2.535)
<b>Head</b>	0.486*** (8.684)	0.457*** (7.944)
<b>Female*Head</b>	-0.072 (-0.861)	-0.061 (-0.724)
<b>Married</b>	-0.017 (-0.388)	-0.005 (-0.113)
<b>Wife of Head</b>	0.117* (1.760)	0.120* (1.748)
<b>Migrant</b>	0.061** (2.001)	0.012 (0.372)
<b>Migrated for Marriage</b>	-0.154** (-2.411)	-0.094 (-1.421)
<b>Female*Migrated for Marriage</b>	0.136* (1.661)	0.037 (0.443)
<b>Household Asset Index</b>		-0.047*** (-6.459)
<b>Ultra-Poor</b>		-0.106** (-2.145)
<b>ln(Per Capita Household Consumption)</b>		0.019 (0.607)
<b>ln(Average Community Consumption)</b>		0.377*** (9.928)
<b>Constant</b>	-1.597*** (-38.044)	-6.049*** (-13.627)
<b>N</b>	28297	28196
<b>Pseudo R2</b>	0.032	0.047
<b>Chi 2</b>	279.406	407.327

Notes: †All adults (aged 15 or over) included. t values in parentheses below coefficients. \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels respectively. Standard errors are corrected for potential heteroskedasticity using White (1980).

As well as being a victim of crime, respondents were asked three main subjective measures of fear of crime. Around 85% of both heads and the total adult population reported feeling “very safe” or “fairly safe” from criminals in their own homes. A Pearson chi square test strongly rejects the null hypothesis of independence between feeling unsafe and having been attacked for both All Adults and Heads only with chi square values of 167.9822 ( $p=0.000$ ) and 136.1024 ( $p=0.000$ ) respectively. Respondents who felt unsafe were asked to specify the main source of the threat, with over half of respondents indicating unarmed burglars.

We next calculate the proportion of respondents in each neighbourhood who reported having been attacked. This provides us with an “attack risk” variable. The “attack risk” variable has a mean of 2.42% and range of 0% to 18.64%, that is, in the most dangerous community, nearly 19% of respondents reported having been attacked in the previous year.

We classify neighbourhoods into one of five categories based on the reported crime rates. Table 3 shows that around 44% of households live in areas in which the risk of attack is under 1% (very low risk). 28% of households live in areas in which the risk is 1-3% (low risk). Around 4% live in very high risk areas with a risk of attack of greater than 10%.

**Table 3: Percent of households living in neighbourhoods with different risks of attack**

<b>Risk of Attack</b>	<b>% Households</b>
Under 1%	44.15%
1-3%	27.84%
3-5%	10.99%
5-10%	12.94%
Above 10%	4.08%

## ***1.2 Linking crime and happiness***

While crime data is available for each household member, only the household heads were asked to report their life satisfaction. The remainder of the paper focuses only on household heads. Over 71% of household heads who reported having been attacked during the previous year also reported being very dissatisfied or dissatisfied with their life, compared with 62% of those who had not been attacked (see Table 4). Those who did not suffer an attack were more likely to be satisfied or very satisfied (around 24%) than those who had been attacked of whom around 18% were satisfied or very satisfied. This offers initial evidence of a link between crime and happiness.

Of those who reported feeling unsafe over three quarters were either very dissatisfied or dissatisfied, compared with around 60% of those who did not feel unsafe. Those who feel unsafe are also less likely to be happy with their lives, with around 18% reporting being satisfied or very satisfied, compared with around 25% of those who did not feel unsafe.



**Table 4: Life satisfaction, attack status and fear of crime**

	Life satisfaction by attack status		Life satisfaction and fear of crime	
	Attacked	Not Attacked	Feel Unsafe	Do not Feel Unsafe
Dissatisfied/Very Dissatisfied	71.56%	62.33%	75.22%	60.35%
Neither Satisfied nor Dissatisfied	10.09%	13.71%	6.99%	14.68%
Satisfied/Very Satisfied	18.35%	23.95%	17.79%	24.97%
	100.00%	99.99%	100.00%	100.00%

Figure 1 illustrates the link between life satisfaction and the risk of being attacked in the neighbourhood. The proportion of people who report being dissatisfied or very dissatisfied increases as the attack rate increases. Similarly, the proportion who report being very satisfied, satisfied or neither satisfied no dissatisfied is falling in crime.

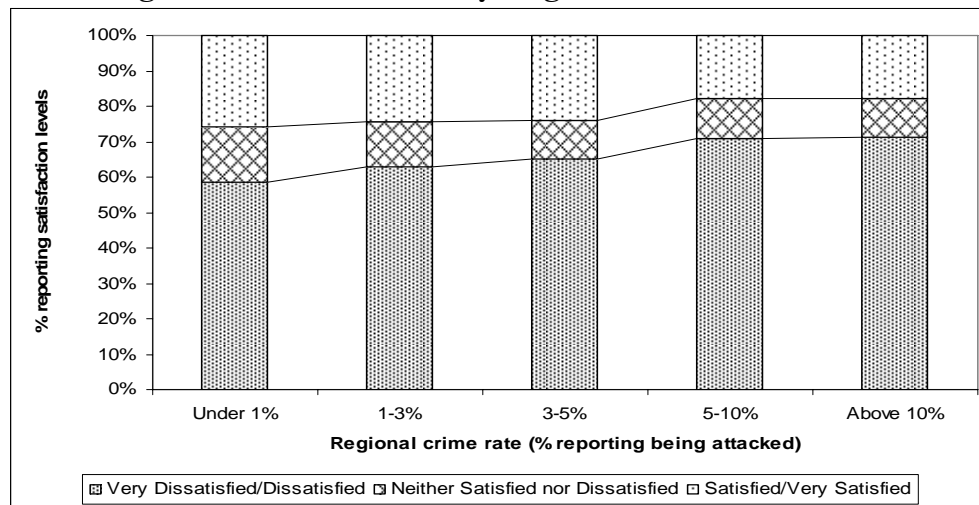
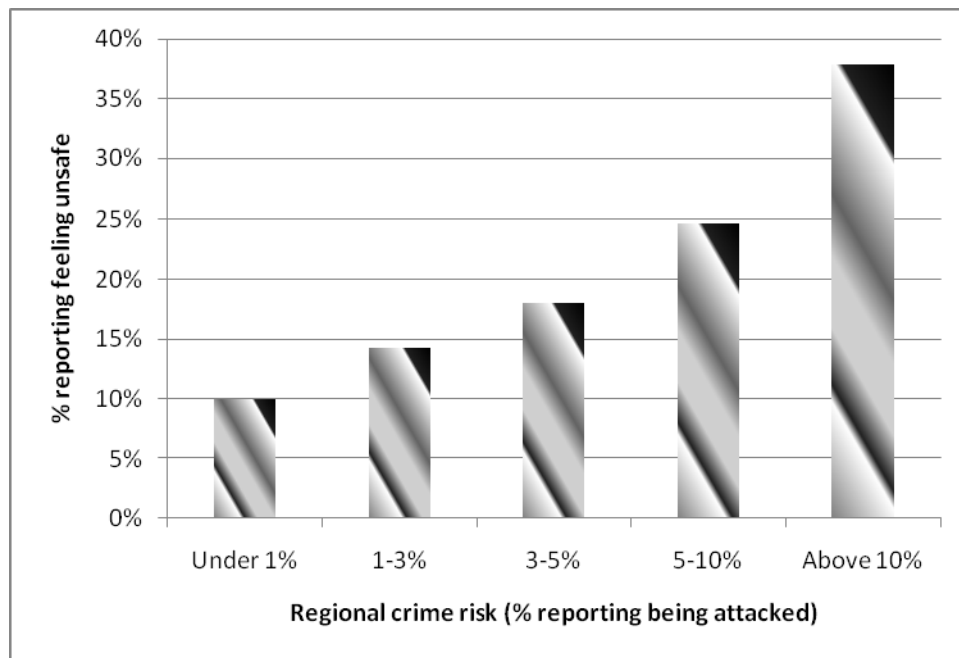
**Figure 1: Life satisfaction by neighbourhood risk of attack**

Figure 2 shows the link between the crime rate and feeling unsafe. The proportion of people reporting feeling unsafe increases as the crime level in the neighbourhood increases. In addition, there is a positive and significant correlation of 0.0985 ( $p=0.01$ ) between risk of attack and feeling unsafe. On average, those who reported feeling unsafe did so with reason.

**Figure 2: Link between risk of attack and feeling unsafe**



The non-technical analysis indicates that there are strong links between crime and feelings of insecurity and happiness. Those who have been attacked tend to report lower levels of life satisfaction and life satisfaction is negatively associated with the neighbourhood crime rates. In addition, there is evidence to suggest that simply feeling in danger is associated with lower levels of life satisfaction. On average, those who reported feeling unsafe tend to live in more dangerous neighbourhoods.

## 2 Econometric analysis

### 2.1 Methodology

The previous section showed a clear link between crime and fear of crime, and life satisfaction. This section models the impact of crime on household head life satisfaction using an ordered probit model, as is standard in the subjective well being literature. Self-reported satisfaction is regressed onto a number of variables including crime which takes either an objective form (based on likelihood of crime by area or whether a victim of crime) or subjective form ('feeling' of being a victim of crime), consumption per capita in each household and a vector of personal and geographic characteristics (e.g. age and province).

This model does not consider endogeneity issues meaning estimated coefficients are correlates rather than determinants<sup>4</sup>. However for the case of crime and life satisfaction Powdthavee (2005) discusses the issue of causality and notes that both economic theory and various psychological

<sup>4</sup> For a discussion of the endogeneity issues see Deiner and Seligman (2004), Deiner et al. (2002), and Frey and Stutzer (2002).

studies indicate that “psychological distress seems to run from being a victim of crime rather than the other way round”. He states that “the direction of causality runs unambiguously from criminal victimization to well-being”. We thus interpret significant coefficients on having been attacked during the previous year as crime impacting on individuals’ happiness.

The issue is not so clear cut for fear of crime. It could be, for example, that individuals who fear crime more tend to be unhappier. However, the inverse could also be the case. Although our descriptive statistics indicate a clear link between fear of crime and risk of crime, we prefer to remain cautious in the interpretation of coefficients on the subjective fear of crime variable. We therefore favour discussing significant coefficients on subjective fear of crime as associations rather than as causal. Nonetheless, we believe the models including these variables offer some interesting insights into the link between crime and wellbeing.

In addition to crime variables, we include other covariates traditionally found in subjective wellbeing analyses. In particular, we include household characteristics including log of per capita income, a dummy indicating whether a household is below the national ultra poor poverty line and an asset index calculated using principle components analysis. Individual characteristics including age and its square; education level; marital status; and employment are also included. Regional dummies are also included but not shown.

We enter the different measures of crime separately, and estimate 3 models for the whole sample and for male and female headed households separately in order to understand any systematic differences between these two groups. Results are found in Table 5.

## **2.2 Results**

### *Crime and Life Satisfaction*

The pooled sample results confirm the link between crime and happiness found in the analysis of the descriptive statistics. Model 1 indicates that having been attacked in the previous 12 months causes reported life satisfaction to decrease, *ceteris paribus*. This result holds when regional crime level is included in Model 2 which itself significantly reduces life satisfaction. The square of regional crime is also included in Model 2 and we find evidence that household heads in higher crime areas do not suffer additional losses in life satisfaction. Powdthavee (2005) finds that in South Africa the well being gap between crime victims and non-crime victims may actually be smaller in high crime districts. These results suggest that once regional crime reaches 4.45%, people adjust to this, and it ceases to make them less happy. However, when the sample is split by gender of head of household

these results are only observed for male headed households. Indeed there is a major difference between male and female headed households with respect to crime. Objective measures of crime are consistently negative but insignificant for females. By contrast, the subjective measure of crime “feel unsafe” included in Model 3 is negative and highly significant for female headed households as well as for male headed households. There is thus a strong negative association for females between *feeling* unsafe and life satisfaction, but not between actually being unsafe and life satisfaction. This is a significant result despite the fact that around 3.7% of female heads reported having been attacked in the previous year compared with 6.4% of men.

### *Human Capital and Life Satisfaction*

Age is negative and its square positive indicating the well known U-shaped life satisfaction-age relationship. Primary education has a positive impact on happiness compared with the baseline of no education. Interestingly, those with an education level above secondary are actually less happy than others after controlling for income. This is a new finding in the African well being literature and is unusual in the well being literature generally. Graham and Hoover (2006) find that on average well educated Africans report higher life satisfaction scores, whilst Hinks and Gruen (2007) and Powdthavee (2005) find that higher educated South Africans, *ceteris paribus*, report higher life satisfaction levels. Highly educated Malawians may have too high expectations that are unlikely to be attained which affect life satisfaction negatively. Why highly educated Malawians are different to other Africans in this regard is not at all clear though. Alternatively, basic education in literacy and numeracy are likely to significantly contribute to quality of life, giving people improved access to a wider range of consumption goods, medicine and (communication) technologies. Issues of endogeneity arise here though since level of education cannot only influence well being but also earnings and household income levels<sup>5</sup>. When dividing the sample by gender of household head, it is found that primary education has a positive impact on life satisfaction for females, but not for males. In addition, higher education is negative and significant for females, but not significant for males. This may be an indication of job market discrimination with males being able to take advantage of their higher education, but females not. Given the positive externalities better education can have, particularly in poor countries, this is an area of research that requires further investigation but is beyond the scope of this paper.

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<sup>5</sup> The highly educated worker could well be the principle earner in the household but has to sacrifice more of this income to other household members that could negatively affect happiness.

### *Income, Asset Wealth and Life Satisfaction*

Coefficients on our control covariates are in line with other studies. In particular, the log of per capita consumption is found to be positive and significant across all model specifications and across female and male head of households. Other things equal, increased consumption levels increase happiness. Households which are below the national ultra-poor poverty line, calculated by the Malawian National Statistical Office tend to report lower life satisfaction. The asset index is consistently positive and significant indicating that greater wealth (and therefore perhaps living conditions) is associated with increased life satisfaction.

### *Economic Activity and Life Satisfaction*

Self employment and salaried employment are consistently positive and significant. Those with these employments tend to be happier than the baseline farmer, other things being equal. Being unemployed (as opposed to being a farmer) is associated with lower life satisfaction amongst females but not amongst males, whilst males benefit from salaried and self-employment, but females do not. Here again, a labour market explanation is likely, with males securing better salaried work and running businesses that bring them more satisfaction than their female counterparts<sup>6</sup>.

### *Seasonal, Geography and Life Satisfaction*

The hungry season dummy is a control variable which is equal to one for households which were interviewed during December, January or February. This is the time of year when food stocks from the previous year's harvest tend to run out. Food is often scarce for a few months during this period until the new harvest. The variable is significantly negative for pooled, male and female headed households indicating that short term factors, although predictable, can impact on reported life satisfaction. It is therefore important to include this as a control variable.

The rural dummy is positive and significant indicating that, other things equal, those living in rural areas report higher life satisfaction than their urban counterparts. The relationship between well being and urban areas is one that has received relatively scant research in the literature. Hudson (2006) finds that UK village dwellers are more satisfied with life than others. Explanations of this finding are varied. It could be argued that in developed countries town dwellers perceive public services to be poor because of the number of people using them. Lewis (1954) was the first economist to argue that urban life was more stressful than rural life. Urban wage premiums were, amongst other things, a result of the 'psychological cost of transferring from the easy going life of

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<sup>6</sup> In Malawi, self-employed females tend to run small home-based businesses such as beer brewing, with many males running larger trading firms.

the subsistence sector to the more regimented environment of the capitalist sector' (ibid, pp.150). Issues of population density have as yet not been addressed in mainstream economic literature but are an area of research that needs inquiry. In Malawi rural dwellers may be happier than others simply because they have no alternative point of reference. Meanwhile urban dwellers may have migrated from rural villages so do have an alternative view: While the grass may always be greener, this is conditional on having migrated in the first place.

### **3 Conclusions**

This paper has used detailed descriptive statistics and standard subjective wellbeing econometric methodology to investigate the link between crime and life satisfaction. Results indicate that the link is gendered with males and females responding to different crime variables.

Our results confirm that there is a negative relationship between crime and happiness with having been attacked in the previous year impacting negatively on life satisfaction. In addition, happiness is declining in neighbourhood crime level; the more respondents in a given neighbourhood who reported being attacked, the lower is life satisfaction. However, the relationship is not linear. Happiness declines until around 4.45% of the neighbourhood reported having been attacked, after which happiness begins to increase. In addition, a *feeling* of being unsafe is negatively associated with life satisfaction.

Key gender differences include the finding that both objective measures of crime and the subjective feeling unsafe variable impact negatively for males. For females only feeling unsafe effects life satisfaction with all objective crime variables being insignificant. Although the descriptive statistics reveal that there is a link between feeling unsafe and the neighbourhood crime level, this regression result indicates that the variables are not capturing the same thing.

Regarding other covariates, we find that primary education has a positive impact on happiness for females but not males and that highly educated females may encounter discrimination in the labour market since this group are significantly less satisfied with life. Both consumption and an asset index are positively associated with happiness for males and females. Age follows the usual U-shape found by other authors.

Table 5

Model	1				2				3			
	All HH	Head HH	Female Head HH	Male Head HH	All HH	Head HH	Female Head HH	Male Head HH	All HH	Head HH	Female Head HH	Male Head HH
log(Per Capita Consumption)	0.110*** (4.111)	0.111* (1.936)		0.106*** (3.495)	0.116*** (4.313)	0.111* (1.941)		0.115*** (3.770)	0.134*** (4.984)	0.127** (2.220)		0.133*** (4.345)
Ultra Poor	-0.073** (-2.096)	-0.121* (-1.665)		-0.058 (-1.462)	-0.080** (-2.282)	-0.124* (-1.706)		-0.067* (-1.685)	-0.080** (-2.261)	-0.125* (-1.713)		-0.066* (-1.651)
Attacked in Previous 12 Months	-0.205*** (-4.723)	-0.171 (-1.438)		0.209*** (4.450)					-0.129*** (-2.891)	-0.144 (-1.192)		-0.115** (-2.374)
% in Region Reported being Attacked in last 12 Months					-4.230*** (-4.637)	-1.576 (-0.819)		5.091*** (4.875)	-1.445*** (-3.834)	-0.458 (-0.591)		1.848*** (4.334)
Square % in Region Reported being Attacked in last 12 Months					18.838** (2.475)	6.182 (0.389)		22.222** (2.547)				
Feel Unsafe									-0.308*** (-9.375)	0.246*** (3.544)		0.331*** (8.848)
Female Dummy	-0.065* (-1.852)				-0.060* (-1.727)				-0.054 (-1.541)			
Age	-0.007* (-1.828)	-0.008 (-1.219)		-0.004 (-0.947)	-0.006* (-1.776)	-0.008 (-1.171)		-0.004 (-0.882)	-0.007* (-1.818)	-0.008 (-1.249)		-0.004 (-0.868)
Age Squared	0.000 (1.642)	0.000 (1.381)		0.000 (0.647)	0.000* (1.665)	0.000 (1.360)		0.000 (0.650)	0.000* (1.648)	0.000 (1.427)		0.000 (0.576)
Married Dummy	0.046 (1.555)	0.144 (1.503)		0.040 (1.267)	0.046 (1.542)	0.156 (1.615)		0.037 (1.170)	0.048 (1.603)	0.151 (1.551)		0.040 (1.254)
Unemployed†	0.011 (0.167)	-0.247* (-1.702)		0.069 (0.980)	0.015 (0.237)	-0.246* (-1.697)		0.077 (1.083)	-0.003 (-0.045)	-0.257* (-1.757)		0.055 (0.789)
Home Worker†	0.019 (0.343)	0.080 (1.082)		-0.108 (-1.233)	0.023 (0.417)	0.081 (1.098)		-0.107 (-1.224)	0.027 (0.481)	0.086 (1.162)		-0.101 (-1.139)
Student†	0.070 (0.370)	1.080 (1.606)		0.007 (0.039)	0.089 (0.478)	1.084 (1.607)		0.034 (0.178)	0.101 (0.518)	1.121 (1.619)		0.042 (0.212)
Salaried Employment†	0.110*** (3.413)	0.105 (1.040)		0.108*** (3.161)	0.113*** (3.510)	0.106 (1.047)		0.112*** (3.260)	0.107*** (3.327)	0.103 (1.030)		0.105*** (3.053)
Self-Employment†	0.138*** (4.209)	0.042 (0.502)		0.148*** (4.118)	0.145*** (4.422)	0.046 (0.548)		0.155*** (4.309)	0.136*** (4.150)	0.043 (0.513)		0.145*** (4.033)
Other Employment†	-0.065 (-1.390)	-0.062 (-0.654)		-0.078 (-1.437)	-0.067 (-1.432)	-0.061 (-0.648)		-0.083 (-1.516)	-0.071 (-1.508)	-0.053 (-0.563)		-0.091* (-1.667)
Household Size	-0.000 (-0.080)	-0.009 (-0.686)		0.001 (0.078)	0.001 (0.155)	-0.008 (-0.574)		0.002 (0.287)	0.005 (0.833)	-0.004 (-0.322)		0.006 (0.908)
Primary Education†	0.080*** (2.903)	0.160*** (3.043)		0.032 (0.983)	0.079*** (2.900)	0.160*** (3.063)		0.030 (0.925)	0.089*** (3.251)	0.165*** (3.149)		0.044 (1.331)
Secondary Education†	0.031 (0.912)	0.060 (0.700)		-0.006 (-0.149)	0.031 (0.909)	0.057 (0.675)		-0.007 (-0.185)	0.036 (1.037)	0.061 (0.720)		-0.001 (-0.017)
Higher Education†	-0.195* (-1.876)	-0.581* (-1.761)		-0.175 (-1.586)	-0.191* (-1.838)	-0.582* (-1.773)		-0.172 (-1.559)	-0.205* (-1.960)	-0.592* (-1.771)		-0.184* (-1.659)
Rural Dummy	0.084** (1.963)	0.122 (1.220)		0.052 (1.094)	0.089** (2.089)	0.120 (1.208)		0.060 (1.268)	0.091** (2.115)	0.117 (1.176)		0.063 (1.308)
Asset Index	0.062*** (8.764)	0.089*** (5.066)		0.058*** (7.326)	0.062*** (8.762)	0.089*** (5.062)		0.057*** (7.313)	0.062*** (8.748)	0.088*** (5.069)		0.058*** (7.324)
Hungry Season	-0.100*** (-3.739)	-0.115** (-2.032)		0.101*** (3.293)	-0.124*** (-4.547)	-0.121** (-2.113)		0.131*** (4.221)	-0.115*** (-4.232)	-0.124** (-2.169)		0.118*** (3.826)

**Table 5 (cont.)**

Model	1			2			3		
	All HH	Head HH	Female Head HH	All HH	Head HH	Female Head HH	All HH	Head HH	Female Head HH
Cut 1 Constant	0.092 (0.305)	0.150 (0.243)	0.036 (0.104)	0.071 (0.235)	0.140 (0.225)	0.020 (0.058)	0.264 (0.874)	0.262 (0.423)	0.226 (0.654)
Cut 2 Constant	1.221*** (4.042)	1.294** (2.086)	1.169*** (3.390)	1.201*** (3.972)	1.284** (2.055)	1.155*** (3.350)	1.401*** (4.637)	1.410** (2.275)	1.368*** (3.966)
Cut 3 Constant	1.647*** (5.449)	1.760*** (2.834)	1.587*** (4.601)	1.628*** (5.380)	1.750*** (2.798)	1.574*** (4.566)	1.830*** (6.054)	1.878*** (3.027)	1.790*** (5.187)
Cut 4 Constant	2.602*** (8.616)	2.638*** (4.253)	2.566*** (7.444)	2.584*** (8.546)	2.627*** (4.204)	2.555*** (7.415)	2.790*** (9.235)	2.758*** (4.453)	2.774*** (8.041)
N	11221	2570	8651	11221	2570	8651	11221	2570	8651
Pseudo r2	0.063	0.070	0.064	0.064	0.070	0.065	0.067	0.072	0.069
Chi 2	1886.720	513.288	1443.272	1882.356	513.932	1450.523	1976.373	532.878	1523.783

Notes: † “Farmer” is omitted occupation dummy and “no education” is omitted education level. t values in parentheses below coefficients.

\*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels respectively. Standard errors are corrected for potential heteroskedasticity using White (1980).



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### Appendix I: Descriptive Statistics

	All Households					Female Headed Households					Male Headed Households				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Wellbeing	11272	2.424	1.197	1	5	2582	2.287	1.161	1	5	8690	2.465	1.205	1	5
Per Capita Consumption	11280	24709	27685	1425	765641	2583	22523	23141	2710	458193	8697	25358	28867	1425	765641
Ultra Poor Dummy	11280	0.167		0	1	2583	0.191		0	1	8697	0.160		0	1
Attacked	11280	0.058		0	1	2583	0.037		0	1	8697	0.064		0	1
Crime Rate	11280	0.023	0.031	0	0.186	2583	0.023	0.031	0	0.186	8697	0.024	0.031	0	0.186
Neighbourhood Crime Rate	11280	2.050	1.197	1	5	2583	2.035	1.205	1	5	8697	2.054	1.195	1	5
Feel Unsafe	11280	0.151		0	1	2583	0.151		0	1	8697	0.151		0	1
Female Head	11280	0.229		0	1										
Age	11272	42.459	16.354	14	99	2582	48.403	17.851	14	99	8690	40.693	15.449	14	99
Married	11280	0.638		0	1	2583	0.051		0	1	8697	0.813		0	1
Unemployed	11280	0.025		0	1	2583	0.019		0	1	8697	0.027		0	1
Home Worker	11280	0.034		0	1	2583	0.103		0	1	8697	0.014		0	1
Student	11280	0.004		0	1	2583	0.002		0	1	8697	0.004		0	1
Salaried Employment	11280	0.170		0	1	2583	0.066		0	1	8697	0.201		0	1
Self Employed	11280	0.140		0	1	2583	0.105		0	1	8697	0.151		0	1
Other Job	11280	0.057		0	1	2583	0.061		0	1	8697	0.056		0	1
Household Size	11280	4.547	2.336	1	27	2583	3.810	2.125	1	15	8697	4.766	2.351	1	27
Primary Education	11280	0.426		0	1	2583	0.358		0	1	8697	0.446		0	1
Secondary Education	11280	0.286		0	1	2583	0.124		0	1	8697	0.334		0	1
Higher Education	11280	0.016		0	1	2583	0.007		0	1	8697	0.019		0	1
Rural Area	11280	0.872		0	1	2583	0.914		0	1	8697	0.860		0	1
Asset Index	11237	0.000	2.263	-2.606	12.707	2572	-0.479	1.941	-2.535	11.526	8665	0.142	2.332	-2.606	12.707
Hunger Season	11280	0.184		0	1	2583	0.184		0	1	8697	0.185		0	1